

Time Line of Arctic grayling in SW Montana and Centennial Valley

Compiled by Bill West, Belgrade, MT gjestson@gmail.com

Sources are cited or are from (Fisheries) archives of the USFWS Spearfish, SD

1805 (August 22). Discovery of the Montana grayling.

As Lewis and Clark explored the Upper Missouri River above the Three Forks, they navigated the Jefferson and then the Beaverhead rivers, with a side excursion up the Big Hole River. They devoted much effort to documenting flora and fauna. They did not catch or observe grayling until camped at the up-most reach of the Beaverhead River, where Red Rock River and Horse Prairie Creek become the Beaverhead ("Camp Fortunate", now submerged beneath Clark Canyon Reservoir). Using "a drag of bushes" to herd fish into a shallow area, in about two hours they caught 528 fish. *"Among them we observed for the first time trout of a white or silvery color, except on the back or head, where they are of a bluish cast; in appearance and shape they resemble exactly the speckled trout, except they are not quite so large, though the scales are much larger; the flavor is equally good."* The 12 fish so described by Lewis and Clark were determined to be grayling in 1895 by Dr. James Henshall, Bozeman Fish Hatchery. Henshall, James A. 1898a. The Grayling. Forest and Stream Vol 51. July 23, 1898. Field and Stream Publishing Company, NY. Pg. 70.

1874

Grayling were first described in 1874 as *Thymallus montanus* by biologist James W. Milner. The type specimen was collected by Acting Assistant Surgeon, George Scott Oximixon, U.S. Army, Camp Baker, Montana Territory. Camp Baker was located very close to the Smith River northwest of White Sulphur Springs, Meagher County. Milner also based his description on three specimens taken by geologist Ferdinand V. Hayden during his Geological Survey of 1872 from Willow Creek, Gallatin County, MT.

1891 (August) Beaverhead River 2 miles above Dillon, MT –

Dr. Barton Evermann, Ichthyologist, US Fish Commission, surveyed the fishery values of the region and identified locations for future establishment of a government fish hatchery. *"This is apparently too warm for trout, as none were seen, and we were told that none are found this far down the stream. It is, however, an excellent stream for whitefish and grayling, with which species it is well supplied. Suckers, dace, and blobs were also abundant, the blobs being exceptionally large"* (Bulletin of the U.S. Fish Commission 11: p 31 Evermann, B. 1893).

1891 (August) Red Rock River near Dell, MT

Evermann's survey also found *"This is a very good fish stream, blobs, dace, suckers, grayling, and whitefish being abundant, and one specimen of the ling (Lota lota maculosa) was taken. No trout were found here...."* (Bulletin of the U.S. Fish Commission 11: p 31 Evermann, B. 1893).

1891

Dr. David Starr Jordan, US Fish Commission Ichthyologist, surveyed fishery values of the Yellowstone Park region and identified locations for future establishment of a U.S. government fish hatchery. He mapped and wrote of grayling at Horsethief Springs, now under Hebgen Lake, MT. 'A reconnaissance of the streams and lakes of The Yellowstone National Park, Wyoming, in the interest of The United States Fish Commission'. (Bulletin of The U.S. Fish Commission 9:41-63. Jordan, D. S. 1891).

1892

The US. Fish Commission, a branch of the US Dept. of Commerce established the Bozeman Fish Hatchery, the 4th such station of the US government in the nation. James Henshall was selected as manager (1892-1909). <https://historicmt.org/items/show/2415>

1893

(Spring) Gates were closed on the first Dam on the Red Rock River (Lima Dam). It blocked fluvial grayling migrations into and out of the Centennial Valley. *"This valley [Centennial Valley] is given up to be the best spawning ground for fish in Montana. Every year there are millions of greyling hatched out here and gone to help stock the lower rivers (what escape the ditches) but this spring the dam [Lima Dam] has kept the fish down and there will be very few to go down this fall. Parties at work on the dam claim the water has been black with fish all spring below the mouth of the tunnel trying to get up. It seems when it is unlawful to catch a few fish to eat that the fish should have a chance to come up to their natural spawning grounds."* (Dillon Tribune June 20, 1893: *Magdalen News*) [Magdalen was an early name for Lakeview, Montana]

1894

(May 13) The Lima Dam washed out one year after its construction, flooding much of the valley below. The dam was 40 feet high and the reservoir was 8 miles long, 1 mile wide, averaged 30 feet deep and impounded *"the largest artificial body of water in the country"*. (Independent Record, March 29, 1894; Helena Standard May 15, 1894; Jorgenson 1920, Centennial Valley Historical Society [CVHS] 2006). The dam was not rebuilt for 15 years; the gates did not close on the rebuilt dam until spring of 1909.

1897

(November 1st) Bozeman Fish Hatchery Manager James Henshall rode a Wagon 120 miles one way from Bozeman to Horsethief Springs, near the Madison River, to negotiate harvest of 1898 grayling eggs from the landowner. Mr. Henshall had hoped to visit the landowner of Elk Springs a tributary into Upper Red Rock Lake but heavy snow prevented him from getting over Red Rock Pass. His round trip took ten days.

1898

James Henshall arranged for a technician to travel from Leadville Fish Hatchery, Colorado by train and then by wagon to Horsethief Springs to harvest grayling eggs for the Bozeman Fish Hatchery. When the technician arrived in spring of 1898 the springhead had been trashed by cattle. The technician drove his wagon from there

about 40 miles west, over Red Rock Pass, to Elk Springs in the Centennial Valley. He met landowner James Blair. Together they harvested grayling eggs from Elk Springs Creek on land that is now Red Rock Lakes National Wildlife Refuge. 3,000,000 eggs were harvested. In 1899 they harvested 5,300,000. This information provided by the USFWS archives, D.C Booth National Historic Fish Hatchery, Spearfish, South Dakota.

1898 through 1908 (11 years)

James Henshall's staff and landowner James Blair harvested 33 million Arctic grayling eggs from the springhead of Elk Springs Ck. The spring's temperature is 54 F, 12 C.

1899

Famous Centennial Valley Homesteader Lillian Culver built a log dam backing the waters of Picnic Springs/Picnic Creek. She stocked it with rainbow trout and other species. Picnic Creek is a tributary into Elk Springs Creek, but colder than grayling can spawn in. Picnic Spring's temperature averages 44 F, 7 C.

1899

The U.S Fish Commission reserved 4 square miles of land surrounding Elk Springs from the U.S Government Land Office (GLO) to prevent claiming by homesteaders. This reserve was similar to how Yellowstone NP was reserved to become our 1st NP. In 1899 there was no National Park Service (NPS), no Bureau of Land Management (BLM), no US Forest Service (USFS) and no US Fish & Wildlife Service (USFWS). It was an extraordinary measure of conservation for such an early date. The US was still in manifest destiny mode. Conservation was in its infancy. Elk Springs Creek, and its head waters Elk Lake, were thus protected by James Henshall and his U.S. Fish Commission leadership, ichthyologists Barton Evermann and David Starr Jordan.

1908

A dam was again built on the Red Rock River downstream of Red Rock Lakes. Gates were closed in spring 1909 and few grayling showed up at Elk Springs. The U.S Fish Commission got almost no eggs. The eggs they got were from Red Rock Creek, the other major tributary to Upper Red Rock Lake. Unlike Elk Springs Creek which originates at a spring and has no significant mountain runoff, Red Rock Creek is a mountain stream with high flows during spring snow melt. Elk Springs Creek flows at or near 22 cubic feet per second (cfs) year-round. Red Rock Creek varies from autumn lows near 15 cfs to highs over 200 cfs, during spring snow melt. High Flows in 1909 made it difficult to capture spawning grayling. Attempts were also made in 1910 and 1911, but Red Rock Creek was logistically more difficult and there just were not many grayling. USFWS Archives Spearfish, SD. Grayling were captured in 1909 below the new Lima dam. Anglers each caught hundreds of grayling a day below the dam (May/June 1909). News media reports: Dillion Tribune, Anaconda Standard and other newspapers.

1909

James Henshall complained in his 1909 annual report that his staff had to reroute Elk Springs Creek when they discovered that duck hunters had routed the channel away

from Upper Red Rock Lake and into Swan Lake, well suited for waterfowl hunting. That also negatively impacted grayling passage and egg harvest in 1909. USFWS Archives.

1921

The U.S. Biological Survey considered the Red Rock Lakes area for National Wildlife Refuge status, recognizing the value of the area to waterfowl. Sperry 1922 published his findings. Butte, MT politics/duck clubs persuaded decision-makers not to proceed.

1926

The Montana Fish Wildlife and Parks (FWP) purchased land for game management for the first time in state history. They purchased 27 acres in the Centennial Valley just below Lower Red Rock Lake to build a dam on the Red Rock River below Lower Red Rock Lake. The location is now within the Red Rock Lakes National Wildlife Refuge.

1930

The State of Montana (FWP) partnered with the Butte Sportsman's Club to construct a sill style dam on the Red Rock River to hold Lower Red Rock Lake artificially high, to help preserve waterfowl habitat. This dam stopped all flow downstream once the water level was lower than the sill. When this happened, no fish passage could occur.

1930's

Drought conditions (1930-36) resulted in periods where water levels were lower than the FWP dam's sill and fish passage stopped. During winter 1933-34 Lima dam operators needed to repair the outlet tunnel structure of that dam. Lima Reservoir drained that winter. The Red Rock River from the FWP dam, and 30 miles downstream to Lima Dam, froze to bottom substrate. Newspapers reported dead fish (grayling) the entire length. *"During the extremely low waters of the mid 1930's local ranchers noticed many individuals of the grayling stranded and dying by the hundreds in the Red Rock River below the Lower Lake"* ... (Vincent, R.E. 1962:119). See year 1962 below.

1934

The very first biologist of the National Park Service, George Melendez Wright, namesake of the <https://www.georgewrightociety.org/> persuaded Ding Darling, (Director of the U.S Biological Survey and two times a Pulitzer Prize winning conservation cartoonist) to reconsider Red Rock Lakes as a National Wildlife Refuge. https://en.wikipedia.org/wiki/Ding_Darling

1934

Basyl Kercheval, of the U.S. Biological Survey, visited for his report on the value of the Red Rock Lakes to wildlife. He wrote, "It is conceded by everyone that the Red Rock Lakes area has been the foremost breeding, nesting and resting place for migratory waterfowl within the state of Montana" (Kercheval, B 1935; on file at the Refuge). Trumpeter Swans were thought near extinction (70). Most (60) were at Red Rock Lakes. **In 1935** Red Rock Lakes National Wildlife Refuge was established by President Franklin D. Roosevelt and the US Congress by recommendation of Ding Darling.

1952

The USFWS built a new on Elk Springs Creek, up near the spring head (it created MacDonald Pond). No grayling could access historic spawning area at Elk Springs springhead after this dam was built unless they were stocked in MacDonald Pond. FWP and USFWS stocked grayling in the pond, hoping to recover them. It was not successful. The pond was used to winter feed Trumpeter Swans so they would not migrate to areas where they were vulnerable to being shot. Feeding stopped in 1992.

1957

The USFWS, Red Rock Lakes NWR built a new dam on Red Rock River. The 1930 dam was removed. This dam was also sill style and blocked fish passage at times.

1962

Vincent, R. E. published. 'Biogeographical and ecological factors contributing to the decline of Arctic grayling, *Thymallus arcticus* Pallas, in Michigan and Montana'. Doctoral dissertation, University of Michigan, Ann Arbor. 169 pp. It is an amazing paper. Nearly every study of Upper Missouri grayling since 1962 cites this paper.

1965

Vincent, R. E. **Bibliography** of the Arctic Grayling, *Thymallus arcticus*, of North America. U. S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Bureau Circular 213. Washington DC. 15 pp. Three years later Vincent published this bibliography.

By 1965 he was working for the USFWS at the Colorado Cooperative Fishery Unit, Colorado State U. Note what he says in italics "*Many of the early American articles (on grayling) are what would now be considered semi -popular. In the past, the works of many competent and outstanding ichthyologists were published in such periodicals and books; these have therefore been included.*" Much history of the Upper Missouri grayling in Montana is here, but never cited by students of the species. Why? A huge trove of information on the ecology of grayling in the late 1800's is lost if one doesn't dig into this bibliography by Vincent.

1965

The Refuge built a dam on Picnic Creek creating Widgeon Pond (120 acres). At about the same time Culver Road was built across Elk Springs Creek above MacDonald Pond and below the spring head. A 24-inch culvert was installed to pass Elk Springs flow.

1987

Ducks Unlimited and the USFWS reconstructed the dam at Lower Red Rock Lake. It was a fish friendly dam with screw gates that allowed fish passage under the gates.

1990s

Concerned citizens and NGOs petitioned for Endangered Species listing of the Upper Missouri grayling in 1994. There were several graduate studies completed on Red Rock Lakes NWR with the guidance of Professor Cal Kaya of Montana State University.

2000,2001 & 2002

Kaeding and Boltz (2004) described their development of a Remote Site Incubator (RSI) to hatch grayling eggs in the wild. They were hatched in Elk Springs Creek on the Refuge. Later, adult grayling were seen in Elk Springs Ck. a result of RSI hatched eggs.

2009

The Comprehensive Conservation Plan for Red Rock Lakes NWR was completed and signed by Region 6 Director Steve Guerten. Grayling conservation was elevated to a high priority for Refuge management over the 15-year lifetime of the document.

2009

In October MacDonald Pond was drained removing all boards in the water control structure. Fish could now pass the dam

2011

Culver Road was breached and the 24-inch culvert was removed. Fish could now pass upstream to Elk Springs where grayling had spawned in great #s from 1898-1908.

2014

Based on litigation on the issue of listing the Upper Missouri Grayling population and court direction to USFWS to consider such, a 12-month finding USFWS was that grayling did not need listing as threatened or endangered at that time.

2016

Elk Springs Creek from the spring head downstream 2000 feet was restored to the original 2 foot deep, 6-foot wide, sinuous channel with a gravel bottom. The work was a partnership of MFWP, USFWS the NGO Arctic Grayling Recovery. That replaced an 8 inch deep, 20-foot-wide straight channel with muddy bottom, that it had become. A homestead era small dam, covered by MacDonald Pond was removed (Blair Pond).

2016

The duck hunter's 1908 diversion of Elk Springs Creek into Swan Lake was rerouted back into its original channel draining to Upper Red Rock Lake. The project was completed by USFWS, US Forest Service and volunteers. The original stream path, historically used by grayling to travel from Upper Lake to their historic spawning area is now the same as when U.S Fish Commission harvested 33 million grayling eggs during May/June of 1898-1908. USFWS Video 'Saving Grayling': https://www.youtube.com/watch?v=G3KG0wn_TqE

2021

FWP and the Refuge (USFWS) restored an additional 1000 feet of the upper Elk Springs Creek channel to a sinuous, narrow, deep condition with a gravel bottom.

2023

New litigation by plaintiffs asks the court to require USFWS to revisit earlier grayling findings and to list the species as threatened or endangered.